

# Is Bangkok becoming more resilient to flooding? A framing analysis of Bangkok's flood resilience policy combining insights from both insiders and outsiders

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## ABSTRACT

The rapidly urbanizing cities in Southeast Asia experience increasing flood impacts due to the consequences of climate change. In these cities, policy efforts to build flood resilience are gaining momentum. The aim of this paper is to understand and assess flood resilience policy development, particularly in cities in developing countries. Bangkok is one of the cities that participates in the 100 Resilient Cities Programme (100RC) - the international policy platform for building resilient cities. In 2017, the Bangkok Metropolitan Administration (BMA) launched the 'Bangkok Resilience Strategy' to translate the resilience concept to its urban context. A framing perspective is adopted to reconstruct the strategy, process and anticipated outcome of Bangkok's flood resilience policy. We studied data obtained from 'insiders' (involved policy makers, experts and consultants) and 'outsiders' (local communities, civil society organizations and news media). Findings indicate that the economic growth frame is prevailing in the development of Bangkok's flood resilience policy, prioritizing structural flood protection with little attention for flood adaptation measures and related social impacts among vulnerable communities. The role of local communities and civil society in the formulation of Bangkok's flood resilience policy is limited. This paper therefore recommends cities in developing countries and cities in the 100RC Programme to organize a more inclusive resilience building process for addressing social problems regarding urban poor communities along with increasing flood safety and protection.

## 1. Introduction

According to the United Nations Office for Disaster Risk Reduction (UNISDR), flood is the most occurring disaster worldwide (CRED, 2016). Cities around the world experience an increasing flood impact due to the consequences of climate change such as increased variability and intensity of rainfall (The World Bank, 2010; Pelling, 2003). Cities in Southeast Asia are mostly located in flood-prone areas (The World Bank, 2010). According to the World Bank's report on climate risk assessment of Asian coastal megacities, major cities in Southeast Asia – including Bangkok, Ho Chi Minh City and Jakarta – are among the top ten cities in the world which are expected to experience more intense flood events (Nicholls et al., 2008; The World Bank, 2010). Moreover, UN-Habitat shows that 31% of the Southeast Asian urban population lives in slums (Dahiya, 2012). These low-income urban populations are the most vulnerable to potential flood impacts and, at the same time, have the fewest resources for coping with the rising climate risks of flooding (Berquist, Daniere, & Drummond, 2015; Lebel, Foran, Garden,

Manuta, & Mai, 2009; Parnell, Simon, & Vogel, 2007).

Concurrently with the increased recognition of the rising flood impacts affecting cities globally, there is a growing demand for cities to become 'more resilient' in order to anticipate and prepare for environmental challenges (Desouza & Flanery, 2013; Duit, Galaz, Eckerberg, & Ebbesson, 2010). Resilience as an urban policy goal can be defined as the capacity of a city to withstand or adapt to shocks and disturbances as well as the ability to adapt and transform to changing socio-ecological conditions (Davoudi, 2012; Holling, 1973). The increasing popularity of the resilience concept has stimulated various international organizations to apply the concept in policy programmes such as the Rockefeller Foundation's 100 Resilient Cities programme (100RC), the UNISDR Making Cities Resilient campaign, and the OECD Resilient Cities project (Johnson & Blackburn, 2014; Spaans & Waterhout, 2017; Vale, 2014). The main objectives of these programmes are the promotion of resilience as a source of policy inspiration, and the development of policy instruments for cities to address acute shocks and chronic stresses that undermine the functions and

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development of cities (ARUP, 2014). Despite its popularity, the resilience concept is difficult to operationalize and the adoption of resilience in an urban context is often criticized for a lack of critical consideration of the resilience building process and outcome (Duit et al., 2010; Hutter & Kuhlicke, 2013; Pizzo, 2015; Vale, 2014; White & O'Hare, 2014). Recent studies on urban flood resilience mostly focused on cities in developed countries (e.g. Hegger et al., 2016; Lu & Stead, 2013; Restemeyer, Woltjer, & van den Brink, 2015). As a consequence, until now little research has been conducted focusing on resilience building in cities in developing countries. While these cities are facing higher impacts from climate risks: they have large marginalized and disadvantaged populations, which are often at higher risk and exposed to floods, they have limited resources, and they have weak political access and influence in flood risk management policies (Lebel et al., 2009; Marks, 2015).

Therefore, the aim of this paper is to understand flood resilience policy development in a city in a developing country. The city of Bangkok was selected as the central case study as it is one of the top ten coastal cities that are highly likely to experience more frequent flood events (Nicholls et al., 2008). Bangkok's high vulnerability to flooding is due to its geographical location, physical infrastructure and rapid urbanization (Sintusingha, 2006; Marome, 2012; Nair, Wen, & Ling, 2014). In addition, Bangkok recently participated in the 100RC Programme and in 2017 formulated the 'Bangkok Resilience Strategy' to address a wide range of the city's problems (BMA, 2017). Drawing on insights from literature on resilience and urban flood resilience (Davoudi, 2012; Hegger et al., 2016; Lu & Stead, 2013; Restemeyer et al., 2015; Vale, 2014; White & O'Hare, 2014), and literature on urban political ecology (Cannon & Müller-Mahn, 2010; Keil, 2005; Mullenite, 2016; Swyngedouw & Heynen, 2003), we identified three main criticisms regarding resilience policy adoption, relating to the strategy, process and outcome of practical resilience-building efforts. Subsequently, we developed a conceptual framework that incorporates these three aspects to study flood resilience building in cities in developing countries.

To analyse the development and implementation of the Bangkok Resilience Strategy, we adopted a framing perspective, which emphasizes the way in which people make sense of ambiguous and complex situations (Van Hulst & Yanow, 2016). Moreover, we included insights from both 'insiders' and 'outsiders' in our data analysis. Insights from 'insiders' (i.e. policy makers, experts and consultants) were analysed to reconstruct how the resilience concept is actually being interpreted – thus focusing on the underlying policy frame structuring the operationalization of flood resilience in Bangkok. Subsequently, views from 'outsiders' (i.e. local communities, civil society organizations and news media) were examined to reconstruct how the resulting resilience policy frame is perceived in a broader urban policy context. The paper concludes by formulating several policy recommendations for Bangkok

to become more resilient to flood risks. These recommendations are also relevant for other cities in developing countries, and for other cities in the 100RC Programme that are developing and implementing their resilience strategy.

## 2. Building inclusive, flood resilient cities

### 2.1. Flood resilient cities from a critical perspective

Resilience is an internationally dominant and influential concept for dealing with ecological threats and social and climate-related risks (Lu & Stead, 2013). In particular, the resilient city policy framework is gaining momentum for cities to become more resilient to floods and other disaster risks (Restemeyer et al., 2015; Hegger et al., 2016; Sörensen et al., 2016; Rosenzweig et al., 2018; Dai, van Rijswijk, Driessen, & Keessen, 2018). The resilience concept is, however, interpreted differently across policy domains and places (Davoudi, 2012; Lu & Stead, 2013; Pizzo, 2015). In urban flood risk management, resilience interpretations are mainly influenced either by the traditional equilibrium perspective or the more recently developed evolutionary perspective (Hegger et al., 2016; Restemeyer et al., 2015). The first interpretation is based on Holling's (1973) equilibrium perspective emphasizing the ability to withstand and recover from shocks and disturbances. Evolutionary resilience interpretations do not only stress resistance and recovery but also stress the ability to adapt and transform for anticipating and adapting to changing socio-ecological conditions (Davoudi, 2012; Desouza & Flanery, 2013; Folke et al., 2010). As with the rising impact of climate change and associated 'unknown unknowns' (Termeer & van den Brink, 2013), complete flood protection of a city is arguably almost impossible (Hegger et al., 2016), the evolutionary interpretation is gaining ground in urban flood resilience thinking. Consequently, flood risk management approaches are currently shifting from primarily resistance and control ('fighting with water') to more integrated and adaptive approaches ('living with water') (Restemeyer et al., 2015; Scott, 2013; Sörensen et al., 2016).

Although resilience nowadays is an influential concept in urban flood risk management, current resilience policy adoption faces several criticisms and challenges. Based on a review of *resilience, urban resilience, flood resilient cities* and *urban political ecology* literature (an overview of the references is included in Table 1), we have identified the following three key criticisms. First, resilience is widely considered a multi-interpretable concept, which is difficult to operationalize in practice (Duit et al., 2010; Porter & Davoudi, 2012; White & O'Hare, 2014; Zevenbergen et al., 2008). Despite various attempts to adopt resilience for addressing flood risks, the operationalization of resilience – especially evolutionary resilience – in a concrete flood risk management strategy remains challenging (Lu & Stead, 2013; Scott, 2013; Restemeyer et al., 2015; Lazzeretti & Capone, 2015; Pizzo, 2015;

**Table 1**

An overview of key criticisms regarding resilience policy adoption.

Criticisms on resilience	Critical questions	Sources
Resilience is a multi-interpretable concept and difficult to operationalize in practice	(i) Resilience by what approach? (which strategy)	Zevenbergen, Veerbeek, Gersonius, and Van Herk (2008); Duit et al. (2010); Folke et al. (2010); Aerts and Botzen (2011); Desouza and Flanery (2013); Lu and Stead (2013); Scott (2013); Coaffee (2013); Restemeyer et al. (2015); Lazzeretti and Capone (2015); Pizzo (2015); Chmutina, Lizarralde, Dainty, and Boshier (2016); Hegger et al. (2016); Sörensen et al. (2016); Dai, van Rijswijk, et al. (2018); Dai, Wörner, and van Rijswijk (2018); Poku-Boansi & Cobbinah (2018); Rosenzweig et al. (2018)
Resilience may induce a shift of responsibilities from the government to local communities	(ii) Resilience by whom? Who gets to decide? (which process)	Davoudi (2012); Shaw (2012a, 2012b); Hutter and Kuhlicke (2013); Vale (2014); Chmutina et al. (2016); Mullenite (2016); Spaans and Waterhout (2017)
Adoption of resilience as a normative aim may disregard potential (positive or negative) outcomes of resilience policy	(iii) Resilience for whom? Whose interest is prioritized? (which outcome)	Cannon and Müller-Mahn (2010); Davoudi (2012); Shaw (2012a, 2012b); Vale (2014); White and O'Hare (2014); Pizzo (2015); Grove and Chandler (2016); Mullenite (2016)

Chmutina et al., 2016; Hegger et al., 2016). As a result, resilience policy adoption in practice tends to focus on a resistance and recovery strategy based on an equilibrium perspective, rather than on developing a more holistic and integrated strategy. It is therefore necessary to study how the resilience concept is translated into a flood risk management strategy in practice (Coaffee, 2013; Lu & Stead, 2013; Pizzo, 2015).

The second key criticism refers to the process of resilience building in practice. Due to the abstractness of the concept, the responsibilities between governmental authorities and local communities to achieve flood resilience are often unclear. Several authors even have argued that resilience policy adoption would entail a shift of responsibilities, for example for flood protection and adaptation, from the government to local communities and businesses (Shaw, 2012a, 2012b; White & O'Hare, 2014; Chmutina et al., 2016). The reliance only on local communities to withstand and adapt to disturbances and crises would create unequal vulnerabilities because some communities might have fewer resources and capacities (White & O'Hare, 2014). A critical consideration of the process of resilience building is thus essential as well.

Third and finally, becoming a 'resilient city' is often used by policymakers as an aspired outcome, while the political nature of the resilience concept is often neglected (Vale, 2014; White & O'Hare, 2014). Several authors have therefore called for a greater emphasis on the political dimension of resilience outcomes, by arguing that a power-blind use of the concept may lead to exposing more risks among disadvantaged communities (Davoudi, 2012; Mullenite, 2016; Pizzo, 2015; Vale, 2014; White & O'Hare, 2014). However, these studies do not expand on the precise and actual negative and positive impacts from resilience policy. A critical perspective is therefore needed to explore the anticipated outcome of resilience policy, which particularly addresses critical questions such as 'resilience for whom' (Davoudi, 2012; Grove & Chandler, 2016; Pizzo, 2015; Vale, 2014).

## 2.2. Analysing resilience building in urban flood risk management

Based on the three key criticisms explained above, we have developed a conceptual framework that can be used for the analysis of resilience building in urban flood risk management in developing countries. The framework, which is presented in Table 2, consists of the three key aspects essential for flood resilience building, namely strategy, process and outcome. In the literature, these aspects have different interpretations in the equilibrium perspective and the evolutionary perspective.

### 2.2.1. Strategy

The first aspect to study is the flood risk management strategy. Resilience in an equilibrium perspective prioritizes protecting cities from flooding by keeping water out of urban areas (Restemeyer et al., 2015; Scott, 2013). The focus is on reducing flood probabilities and increasing robustness and resistance through structural flood protection measures such as dikes, dams and levees. In addition, emergency management and recovery are important as well strengthened (Hegger

et al., 2016; Lu & Stead, 2013; Meijerink & Dicke, 2008). Next to structural flood protection, there is a need to develop strategies aimed at reducing flood consequences and adjusting to climate change uncertainties (Aerts & Botzen, 2011; Lu & Stead, 2013; Restemeyer et al., 2015; Sörensen et al., 2016). The evolutionary perspective therefore emphasizes 'waterscape' or – 'living with water' – perceptions (Thaitakoo & McGrath, 2010; Dahiya & Thaitakoo, 2012). Translated to urban flood risk management, a more holistic and integrated approach is promoted, emphasizing flexible and adaptive measures to anticipate rising flood consequences (Lu & Stead, 2013; Scott, 2013). Adaptive flood risk management measures include spatial measures for retention areas, flexible water storages and flood-proof buildings, as well as long-term adaptation through raising awareness, collaborating and learning among public and private stakeholders to create a shared long-term vision (Hegger et al., 2016; Sörensen et al., 2016). The equilibrium perspective thus emphasizes structural flood protection and recovery strategies; whereas, evolutionary resilience gives more attention to holistic and integrated strategies for both flood safety and adaptation.

### 2.2.2. Process

Second, different resilience interpretations in flood risk management lead to emphasizing roles and responsibilities of stakeholders differently. Various scholars have argued that resilience in the equilibrium perspective emphasizes a top-down, technical approach to implement structural flood protection and recovery strategies (Chandler, 2014; Restemeyer et al., 2015; Shaw, 2012a, 2012b). This approach is perceived to be important to ensure robustness and resistance to flood risks, for which order and control are needed while wider stakeholder collaboration is less emphasized (Hegger et al., 2016; Sörensen et al., 2016). In contrast, developing adaptive and spatial flood risk management strategies, such as smart spatial design of flood-prone areas, increasing flood awareness among communities, and strengthening abilities for learning and continuous improvement, requires an inclusive approach (Hegger et al., 2016; Restemeyer et al., 2015). A resilience strategy according to the evolutionary perspective implies a deliberative process through bottom-up and open stakeholder collaboration working toward common goals in order to achieve a more inclusive resilience outcome (Coaffee, 2013; Hutter & Kuhlicke, 2013; White & O'Hare, 2014). In general, an exclusionary process focusing on managerial technical solutions thus appears to be more related to the equilibrium perspective. The evolutionary resilience instead calls for more open and dynamic processes through wider stakeholder collaboration.

### 2.2.3. Outcome

Third and finally, it is important that a critical perspective of resilience building efforts identifies unequal anticipated outcomes of flood resilience building. The focus on structural flood protection, particularly in economic significant areas, could lead to resilience policy promoting economic growth and competitiveness of a city (White & O'Hare, 2014). A resilience strategy anticipating mainly economic

**Table 2**  
Aspects of flood resilience building in urban flood risk management.

	Equilibrium	Evolutionary
Strategy	Flood protection and recovery	Flood safety, adaptation and transformation
	Robustness	Holistic
	Preparedness	Integrated
	Resistance	Adaptive
Process	Exclusionary	Inclusionary
	Traditional top-down process	Open and dynamic process
	Focus on managerial and technical solutions	Focus on opening up political voices and stakeholder collaboration
	Narrow stakeholder involvement	Broad stakeholder involvement
Outcome	Economic interest	Societal interest
	Economic growth and competitiveness protected from floods and disturbances	Broader societal interest along with flood safety and protection

development outcomes is therefore by some scholars seen as an exclusionary process for the dominant economic interest, which is consistent with the neoliberal agenda (Mullenite, 2016; Shaw, 2012a, 2012b). Although economic development is highly relevant, especially for developing countries, several authors have argued that structural flood protection for economically significant regions could in turn transfer flood risks to other, disadvantaged communities (Davoudi, 2012; Marks, 2015; Vale, 2014). Several studies point out that a focus on only flood protection and recovery might fail to address the social vulnerability to floods, especially among vulnerable communities (Cannon & Müller-Mahn, 2010; Chmutina et al., 2016; Marks, 2015). The equilibrium resilience perspective could thus lead to an emphasis on flood safety and protection exclusively for promoting economic growth and competitiveness of a city, whereas the evolutionary perspective brings more attention to broader societal interests, a broader variety of strategies, and continuous adjustment in coping with increasing flood risks (Chandler, 2014; Hegger et al., 2016).

### 3. Research design

#### 3.1. The case study: Bangkok, Thailand

We used Bangkok, Thailand, as the central case study for understanding flood resilience policy development in cities in developing countries. Bangkok is one of the most urbanized cities in Southeast Asia, and the total population of the city is approximately 11 million (BMA, 2015a). The city is situated in the low-lying areas of the Chao Phraya River delta (Marome, 2012; Nair et al., 2014). The rapid urbanization contributes to increasing physical and social vulnerabilities to floods. As a result of the replacement of agriculture and retention areas with commercial and residential development, the capacity of drainage and flood protection systems is reaching its limits (Roachananakan, 2013; Sintusingha, 2006). Bangkok is regularly impacted by major and minor flood events. The 2011 Flooding was the most devastating flood event in Thailand in the last 10 years, killing over 800 people and costing approximately USD 46.5 billion overall (The World Bank, 2012).

The Department of Drainage and Sewerage (DDS), which is part of the Bangkok Metropolitan Administration (BMA), is responsible for flood and water management in Bangkok. Its key mission involves maintaining and enhancing flood protection infrastructure including dikes, sluices, water pumps and drainage tunnels (BMA, 2015a, 2015b). Bangkok's flood protection systems and drainage infrastructure were constructed to protect the city from the tidal floods of the Chao Phraya River, river runoff from the north of Bangkok, and pluvial floods (see Fig. 1) (BMA, 2015a, 2015b; Marks, 2016; Veesakul, 2016). As part of the 100RC Programme, Bangkok formulated the 'Bangkok Resilience Strategy' to improve the city's resilience to address such challenges as flood risk. This strategy includes different priorities and initiatives to implement resilience in its urban context. The advisor to the Governor of Bangkok was appointed as the Chief Resilience Officer, thereby given the responsibility to lead the various initiatives and projects of the 100RC Programme in Bangkok. In addition, BMA's Department of Environment serves as the secretariat office and central point for coordinating and implementing the initiatives and programmes (BMA, 2017). Using Bangkok as a case study helped to understand how a developing country city is implementing a resilience policy strategy in their own urban flood risk management. This case study could also provide useful lessons for other cities within the 100RC that are developing and implementing their resilience strategy.

#### 3.2. Framing resilience: Combining insights from both insiders and outsiders

Resilience is an open and multi-interpretable concept that requires an interpretive approach for understanding the construction and negotiation of meaning in concrete policy-making practices (Hutter & Kuhlicke, 2013; Porter & Davoudi, 2012). Policy framing is therefore

adopted as an analytical approach for studying the development and implementation of flood resilience policy in Bangkok. Framing, as an interpretative approach, refers to the selection and highlighting of portions of information, and is useful for exploring power relations in the negotiation of meaning in a policy process (Entman, 1993; Van Hulst & Yanow, 2016). With regard to the development of Bangkok's resilience policy, our analysis is based on the combination of insights from 'insiders' and insights from 'outsiders'. First, we reconstructed how the resilience policy is being interpreted by responsible 'insiders', i.e. policy makers, experts and consultants, and examine which policy frame is structuring the operationalization of flood resilience building in Bangkok. Then, in order to evaluate the developed resilience policy, we studied how this policy is perceived among wider stakeholders (the 'outsiders').

#### 3.3. Methods and data analysis

To reconstruct the developed resilience policy frame, we carefully reviewed 4 key policy documents, conducted 15 semi-structured interviews, and organized an expert-focus group discussion. We began with the review of key policy documents such as the Bangkok Resilience Strategy, which was launched in February 2017. The BMA formulated the Bangkok Resilience Strategy under the 100RC Programme and partner organizations, assisted by and in collaboration with the Rockefeller Foundation (BMA, 2017). Additionally, the BMA's flood management policy document, the Annual Bangkok Water Management Report 2016 (BMA, 2015a, 2015b), and two other national policy documents related to Thailand's water and flood management, namely the National Strategic Water Management Plan 2015 (NWRC, 2015) and the National Disaster Prevention and Mitigation Plan 2015 (DDPM, 2015), were studied. The policy document review was the first step in reconstructing Bangkok's flood resilience policy frame. The second step involved 15 semi-structured interviews with involved policy officials, experts and consultants – the 'insiders' (see Table 3). Our interview questions for insiders are mainly related flood problems in Bangkok and the development of Bangkok flood risk management policies after the 2011 Floods. During the fieldwork from February to March 2017, also an expert-focus group discussion was conducted with researchers and academic fellows from the Center for Mega City and City Studies in Bangkok. This focus group discussion aimed to explore the development of flood risk management in Bangkok and problems related to dealing with urban floods.

Subsequently, to understand how the developed resilience policy is perceived, we conducted 12 semi-structured interviews with communities and municipality mayors from neighbouring provinces of Bangkok, located in flood-prone areas, and other relevant civil society and media organizations (see Table 3). Among these flood-affected communities, there are two low-income informal communities and four other communities with mostly low-income and middle-income households. The semi-structured interview questions focused on the interviewees' experience regarding urban flood problems and their perception of Bangkok's flood risk management. Specifically, the interviewees were asked about their perspective on the recently introduced flood management policies including the Bangkok Resilience Strategy, and how they were involved in the development of these policies.

All 27 interviews and the focus group discussion were fully transcribed, and interviewees and participants in the focus group discussion were asked for permission to use the interview transcripts for this research. In the analysis, we used the computer-aided software, Atlas.ti, to develop code networks for interpreting Bangkok's resilience policy. These code networks are based on the conceptual framework, that is, the strategy, process and outcome of resilience building in urban flood risk management (see Table 2). We then used these code networks to reconstruct and analyse the resilience policy from based on insights of insiders and outsiders.

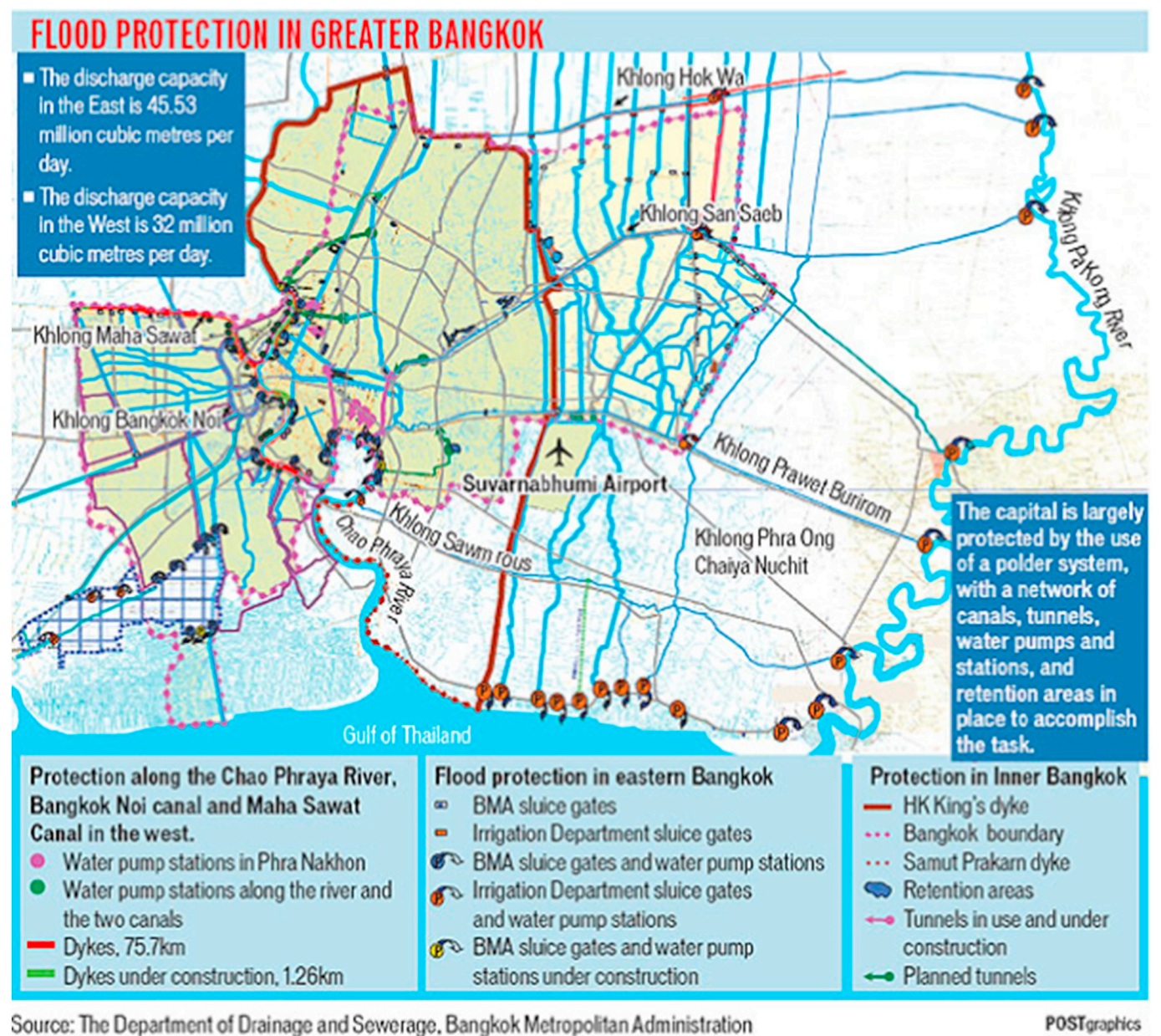


Fig. 1. The flood protection system of Bangkok.  
(Source: <https://www.bangkokpost.com/learning/learning-news/264228/bangkok-drainage-system> accessed 20 December 2017)

Table 3  
Overview of qualitative data collection.

Qualitative data collection
Insiders – reconstruction of developed resilience policy frame
4 policy documents
5 semi-structured interviews with policy officials at the national level
5 semi-structured interviews with policy officials at the metropolitan level
5 semi-structured interviews with policy experts and consultants
1 expert-focus group discussion with academics and researchers
Outsiders – reconstruction of perceiving developed resilience policy among wider stakeholders
2 semi-structured interviews with heads of local-income settlement communities
2 semi-structured interviews with members and heads communities with low-and middle-income households
5 semi-structured interviews with representatives of civil society organizations
2 semi-structured interviews with municipality mayors
1 semi-structured interview with a news editor

4. Bangkok resilience strategy: A new solution for dealing with floods?

4.1. The insiders: Safeguarding economic growth frame

4.1.1. Strategy

Bangkok's existing flood risk management system focuses on structural flood protection and drainage infrastructure (BMA, 2015a, 2015b). As the Head of Bangkok Flood Control Center stated: "The current flood management strategies, especially after the 2011 Floods, are the heightening of dikes along the Chao Phraya River, the construction of more large drainage tunnels, and increasing the drainage capacity of canals". Despite this large investment in structural flood protection, several policy officials argued that the city should not rely on structural flood protection alone. In this context, the Division Head of the Strategy and Evaluation Department, BMA, stated: "The heavy reliance on costly and inflexible flood protection is becoming less

effective for dealing with the changing flood problems the city is facing.” A member of the Bangkok Resilience Strategy coordination team, part of BMA's Department of Environment, explained the changing focus in Bangkok's flood risk management as follows: “The recently developed Bangkok Resilience Strategy aims to increase the variety of flood risk management measures, by for instance increasing the number and capacity of urban retention areas, and by providing incentives for the construction of flood-proof buildings.” The Bangkok Resilience Strategy is generally regarded by the interviewees as a new policy attempt to move away from solely depending on structural flood protection, and shift toward adopting a broader variety of flood risk management measures. The Bangkok Resilience Strategy explains this more integrated flood risk management approach as follows: “As a flood-prone city facing a changing climate, we must look at different approaches for ‘living with water’. These approaches represent more integrated and holistic ways to manage different urban water systems, rather than solely depending on flood protection via hard infrastructure” (BMA, 2017; p.67). Although Bangkok's flood risk management measures currently focus on structural protection and drainage infrastructure, the Head of Bangkok Flood Control Center also introduced an initiative in which communities are involved, namely “Chum-Chon-Ruk-Klong” (“Community Saves Canal”). This initiative encourages community members to take care of their canals and includes workshops by the DDS to increase awareness and to strengthen the role of communities to keep the community's canal clean.

#### 4.1.2. Process

The Bangkok Resilience Strategy aims to address major acute shocks from disasters including floods, fires and earthquakes – and other

ongoing chronic stresses in the city such as traffic, waste and pollution, and poverty (BMA, 2017). With the attempt to tackle these complex urban problems, two policy formulation phases can be distinguished (see Fig. 2). The first phase involved exploratory data collection, including stakeholder consultation and preliminary resilience assessment to identify key policy areas for the resilience strategy. The stakeholder consultation mainly included academia, government, NGO, businesses. The government officials involved were mainly from the BMA. The second phase involved the development and selection of resilience initiatives and programmes. Although the strategy document mentioned that NGOs should be included in the strategy formulation process, mainly policy officials, experts and consultants in different working teams played a major role in identifying and selecting policy interventions for the Bangkok Resilience Strategy (BMA, 2017). These working teams included a ‘flooding team’, an ‘economic prosperity and equality team’, and a ‘reduce impacts of shocks team’. In addition, international collaboration with experts and consultants from other countries in the context of the 100RC Programme was also evidenced in the development of the resilience priorities and initiatives.

#### 4.1.3. Outcome

The Bangkok Resilience Strategy attempts to integrate both social and economic benefits from flood risk management. As stated in the Bangkok Resilience Strategy: “These actions [which maximize natural infrastructure for water management] will be underpinned by community participation for integrated socio-economic, environmental and flood protection benefits” (BMA, 2017; p.65). Although a broader societal outcome seems to be anticipated, the potential economic outcome is also significantly highlighted. The developed resilience strategy

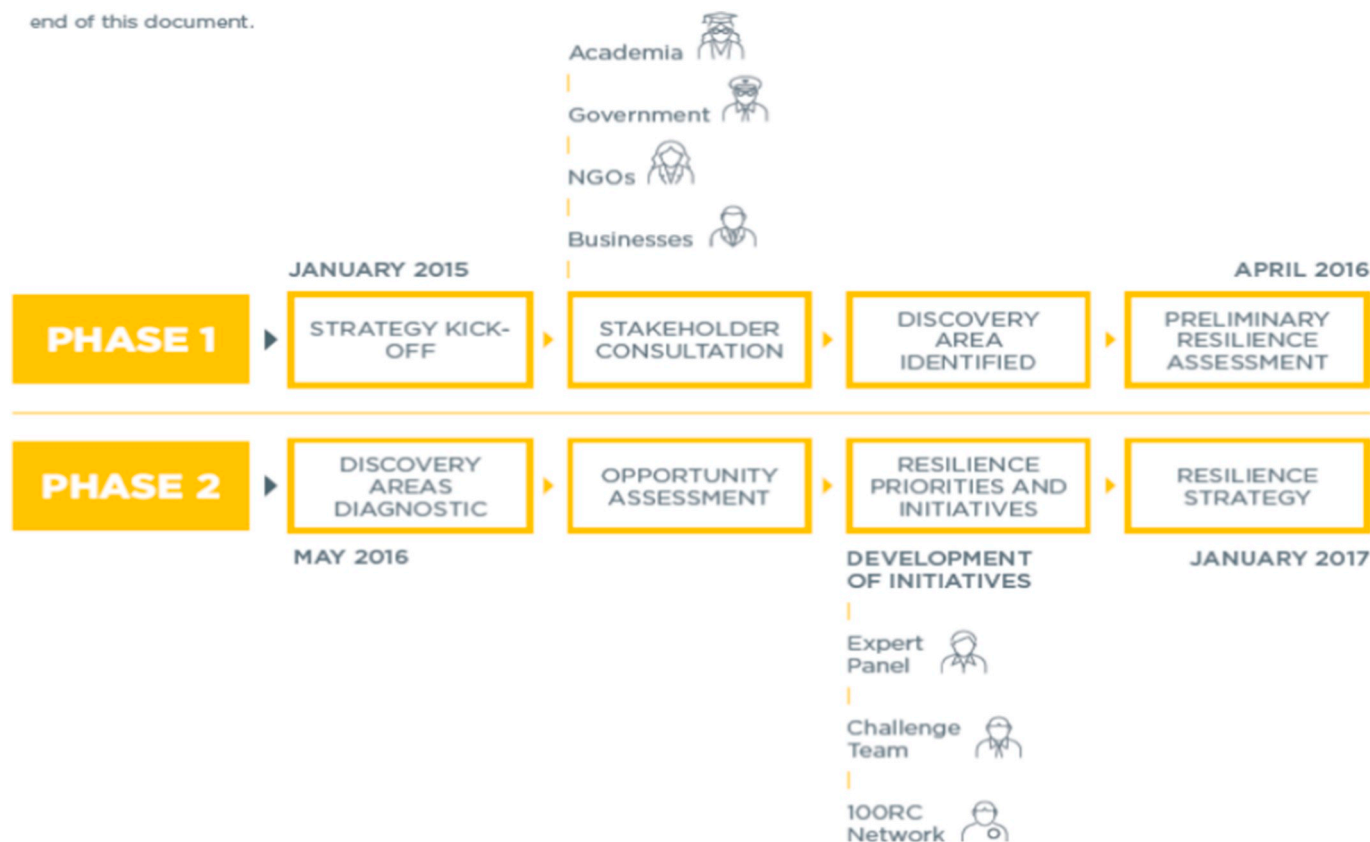


Fig. 2. Bangkok Resilience Strategy formulation process  
Source: BMA, 2017: 31.

prioritizes economic growth, which should be safeguarded from the potential impact of floods and other disturbances. It emphasizes resilience building for maintaining economic activities, “...ensuring that all city residents will be able to share in and enjoy the development gains accumulating over time without any serious disruption” (BMA, 2017; p.32). The Director of Earthquake and Disaster Watch and Studies, part of the Ministry of Interior, explained the economic focus in Bangkok's flood policies as follows: “Bangkok's flood resilience strategies are mainly to protect economic growth in real-estate development and the tourism industry”.

To conclude, an economic growth frame is dominant in the development of the Bangkok Resilience Strategy. In practice, structural flood protection and drainage infrastructure remain the dominant strategy to protect the city and safeguard economic development. In addition, the role of international experts and consultants is significant in the strategy formulation. Although the Bangkok Resilience Strategy attempts to integrate broader socio-economic benefits, concrete measures to achieve this particular aim seem to be lacking and at the same time community involvement is evidently limited.

## 4.2. The outsiders: Call for more space for voices and water

### 4.2.1. Strategy

With regard to the flood risk management strategy, the communities in flood-prone areas, municipality mayors and civil society organizations also see the importance of combining different flood risk management strategies. The representative of the natural and forest conservation foundation, for instance, stated: “Although it is necessary to strengthen flood defences, the BMA should simultaneously implement land use measures for maintaining natural retention areas.” The community leader in Wat Pho Riang also argued that the flood protection measures alone cannot prevent and mitigate flood impacts in the community: “After the 2011 floods, more and higher dikes have been constructed, but we do not yet have an early-warning system and emergency plan to help people in our communities, especially the vulnerable ones, for when the pluvial flooding takes place.” Similarly, the News Editor of the disaster news programme of Thai PBS in Thailand stated that the city particularly needs a more effective early warning system in dealing with the increasing potential flood impacts, especially from heavy rainfall. Acknowledging the problems arising from changing and increasing flood risks, the communities and civil society organizations suggest that the various measures for flood preparation available to and in communities should be implemented.

### 4.2.2. Process

As a result of the focus on structural flood protection and the limited number of measures supporting community flood preparation, the involvement of community and civil society in flood risk management in Bangkok was limited. The measures to relocate informal settlement communities along the canals demonstrate the communities' limited involvement and influence in decision-making. A social activist for the rights of informal settlement communities added that the community members are reluctant to participate in public hearings because they thought they do not have the power to negotiate for their compensations. Moreover, several interviewees indicated that the community flood preparedness initiatives gain little support from the government. The head of the Phan-Thom Community youth volunteer group stressed the role of the community by saying: “I wish BMA District Offices would see the importance of the community and actively support community initiatives such as a community to prevent polluting and littering waste to the canals.” Also, the community leader in Wat Pho Riang, which was

heavily affected by the 2011 floods, explained the need for empowering the communities for reducing flood risks: “We don't want to only receive orders from the government. It is not effective to motivate our community members to work together. We instead want a system for sharing knowledge and training for flood preparedness and emergency response and evacuation.”

### 4.2.3. Outcome

Lastly, the societal interests especially at the community level and among the vulnerable populations had largely been ignored in Bangkok's existing flood management system. First, the social impacts among the informal settlement communities from the relocation measures demand a greater attention according to the interviewees. A civil society organization representative for rights of informal settlement communities explained the impacts resulting from these measures as follows: “The relocation of informal communities disconnects the inhabitants from their existing social and economic networks.” In addition, the community in Promsumrit, where there are several informal settlements located, raised one of the major problems of this relocation: “The complaint is that the price for moving to the government social housing is too high for these low-income dwellers.” Although this community leader agreed with the government relocation plan, he pointed out that this measure must take the interrelated social issues such as poverty into consideration. Second, more attention was needed for inclusive flood risk management measures to also incorporate the interests of disabled people. The representative from the civil society organization for disabled people asked for an inclusive flood early warning system and evacuation shelters for people with special needs. These flood vulnerable communities and groups wished for new flood risk management policies addressing not only the flood problem but also other interrelated social issues. The framing of Bangkok's flood resilience policy highlights economic development, protection and stability without presenting concrete measures to address flood impacts among vulnerable communities, and without addressing interrelated social problems at the community level.

To conclude, the framing of Bangkok's flood resilience policy highlights economic growth, protection and stability without presenting concrete measures to address flood impacts among vulnerable communities, and without addressing interrelated social problems at the community level. The communities, municipality mayors and civil society organizations call for a greater involvement and broader stakeholder collaboration in the development of Bangkok's flood resilience policy. Moreover, they hope that the existing flood risk management will transition toward incorporating an integrated approach that takes into account social and environmental benefits in response to the changing and increasing flood risks.

## 5. Discussion

Previous studies on Bangkok's flood risk management mainly focused on understanding the existing institutional arrangement (Lebel et al., 2011; Kamolvej, 2014; Roachananakan, 2012; Marome, 2013; Saito, 2014; Marks & Lebel, 2016). These studies argued that the centralization of policy and the institutional fragmentation of flood risk management have contributed to the prioritization of structural flood protection. Instead of focusing on the existing institutional arrangement, we analysed Bangkok's ambitions and efforts in becoming flood resilient, also because the development of ‘resilience policy’ is increasingly recognized as a new policy ‘solution’ to urgent problems of the city. To understand the development and implementation of Bangkok's flood resilience policy, we used insights from insiders and

outsiders for exploring the critical dimension of flood resilience building, and we analysed the strategy chosen, the process developed and the outcome anticipated.

With regard to the first aspect of resilience building in practice – the strategy developed – the Bangkok Resilience Strategy is framed as an important step in changing the way of dealing with floods in the city, by focusing not only on strengthening flood safety and protection but also on helping communities to adapt to increasing flood risks. While the strategy document indicates the intention for policy change, the insights from outsiders, however, showed that structural protection remains dominant in Bangkok's flood management system. Within the prevailing economic growth frame, little attention is given to flood adaptation, especially among vulnerable communities. This paradox between the policy's ambitions to move toward a more evolutionary interpretation of resilience (ARUP, 2014) – inspired by the 100RC Programme – and the persistent focus on structural flood protection measures is evidenced in the current practice of Bangkok's flood resilience policy. This finding is consistent with previous resilience publications concluding that the equilibrium perspective is dominant in resilience policy operationalization (White & O'Hare, 2014; Restemeyer et al., 2015; Chmutina et al., 2016; Poku-Boansi & Cobbinah, 2018).

The second aspect was the process of flood resilience building. The Bangkok Resilience Strategy mainly involved policy officials, experts and consultants (the insiders). The NGOs involved are mostly international NGOs, while the role of local NGOs or civil society organizations is very limited. This result arguably contradicts to the findings of Spaans and Waterhout (2017) regarding Rotterdam's participation in the 100RC Programme, which had brought different stakeholders together. In Bangkok, the policy framing is perceived as exclusionary resilience policymaking, which contradicts with the inclusive resilience ambition of the 100RC Programme: "Inclusion emphasizes the need for broad consultation and engagement of communities" (ARUP, 2014, p.5). An open and inclusive process is important for building flood resilience in Bangkok and in other cities in developing countries, that is, for developing a more holistic and integrated approach in urban flood risk management (Hegger et al., 2016; Restemeyer et al., 2015; Sørensen et al., 2016). Realizing urban flood resilience is context-dependent, and both top-down policy instruments and bottom-up local community engagement are important (Hegger et al., 2016; Dai, Wörner, & van Rijswijk, 2018; Rosenzweig et al., 2018).

The third aspect concerned the anticipated outcome of flood resilience building. Although several resilience publications pointed toward the importance of power-relations and critical outcomes of resilience policy (Davoudi, 2012; Pizzo, 2015; Vale, 2014), until now little research has explored the anticipated outcomes of resilience policies. This paper aimed to address this limitation and showed that Bangkok's flood resilience policy is framed to prioritize economic growth and competitiveness with little focus on wider societal outcomes, especially at the community level. This result is in line with the theoretical argument in resilience literature arguing that an uncritical adoption of the resilience concept could prioritize economic interests, which might leave vulnerable populations behind (Davoudi, 2012; Cannon & Müller-Mahn, 2010; White & O'Hare, 2014; Marks, 2015; Mullenite, 2016). In addition, our results showed that the dominant economic growth frame is currently being challenged by the outsiders, who were not involved in the development of the resilience policy. The outsiders see other anticipated outcomes apart from economic development. In general, their perspective could be coined and summarized as a social inclusiveness frame. However, as the interviewed outsiders have varying interests and objectives, more research is needed to explore their particular social inclusiveness framing related to flood resilience building. At this

stage, our results indicated that prioritization only of the economic outcome – for instance, focusing on flood protection for certain economically significant areas without considering the ongoing and increasing flood risks of the whole city – will make it more difficult to respond to increasing flood risks from potential climate impacts.

## 6. Conclusion and recommendations

This paper introduced a conceptual framework to analyse flood resilience building particularly in cities in developing countries, addressing the strategy, process, and anticipated outcome of flood resilience building efforts. As such, this framework contributes to a more in-depth discussion of the power-relations and critical dimensions of the current 'flood resilient city' policy trend. By combining insights from both insiders and outsiders on flood resilience building, this paper demonstrated that although social inclusiveness was anticipated in the Bangkok Resilience Strategy, the economic growth frame remained dominant, reinforcing existing flood resilience strategies and processes, rather than leading to more adaptive and evolutionary ways of dealing with flood risks.

Based on our results, the following policy recommendations can be formulated for Bangkok. (1) To reinvent its flood risk management strategy, it is important that BMA, next to structural flood protection measures, also invests in developing spatial and adaptive measures, such as urban retention areas and flood-proof buildings, and stimulates risk awareness and communication to take into account rising flood vulnerabilities in real estate and urban development. In fact, a holistic and integrated approach to flood risks is not new to Thai people. Traditional elevated Thai houses and watersheds design have evolved as measures to adapt to extreme flood events (Dahiya & Thaitakoo, 2011; Dahiya & Thaitakoo, 2012). The challenge is to build on this traditional knowledge, and use it as an opportunity to develop these spatial and adaptive measures. (2) To this end, collaboration is required between the involved departments within the BMA, as well as between the BMA and other national governmental authorities, private stakeholders, civil society organizations and local communities. In addition, BMA could strengthen the roles of its district offices to support flood preparedness at the community level and to involve vulnerable populations and disadvantaged communities in urban flood risks management. (3) To diversify anticipated outcomes, BMA could identify potential social impacts from flood risks as well as flood protection measures among disadvantaged communities, and timely consider adequate compensation arrangements for affected communities, such as eviction of informal settlements.

These recommendations are also relevant to other cities in developing countries where increasing flood risks, rapid urbanization and urban poverty are prominent issues as well. The development of a place-specific integrated flood risk management approach that builds on traditional knowledge, the organization of an inclusive process emphasizing collaboration including and empowering outsiders, and the consideration of broader societal outcomes next to economic growth are essential to flood resilience building efforts in these cities. At the same time, these recommendations are relevant for Chief Resilience Officers, policymakers, experts, consultants, academics and civil society networks in cities that are part of the 100RC Programme. Although 100RC City Resilience Framework aims to provide cities with a holistic and integrative assessment tool to ensure that in particular the urban poor can survive and thrive (see also Spaans & Waterhout, 2017), our results show how difficult it is to bring this promise to practice, by identifying several critical challenges. Considering specific local problems and involving local communities and private stakeholders, thus

organizing a social learning process which includes both insiders and outsiders, is also an important challenge in cities in developed countries (Pahl-Wostl et al., 2007; Restemeyer, van den Brink, & Woltjer, 2017). Further research is needed to explore in-depth institutional capacity building for social inclusiveness in flood resilience building in cities in

both developing and developed countries. In this respect, it would be relevant to compare how different cities interpret and implement resilience and other international policy concepts and frameworks in their own urban context.

## Appendix. Data collection

Table 1

A list of reviewed policy documents.

Policy documents			
Title	Level of governance	Year	Produced by
Bangkok Resilience Strategy	Metropolitan	2017	Bangkok Metropolitan Administration and collaboration with Rockefeller Foundation under 100 Resilient Cities
Annual Bangkok Water Management Report 2016	Metropolitan	2016	Department of Drainage and Sewerage, Bangkok Metropolitan Administration
National Strategic Water Management Plan	National	2015	National Water Resource Committee
National Disaster Prevention and Mitigation Plan	National	2015	Department of Disaster Prevention and Mitigation, Ministry of Interior

Table 2

A list of interview data collection with policy makers.

Interviews			
Organizations	Level/type of governance	Interviewee(s)	Interview date
1. Department of Water Resource, Ministry of Natural Resource	National	1. Director of Water Quality Crisis Prevention Division and Mekhala Center	16-02-17
2. Royal Irrigation Department, Ministry of Agriculture and Cooperatives	National	1. Head of Water Watch and Monitoring System for Warning Center, Office of Water Management and Hydrology 2. Engineer Specialist	17-02-17
3. Office of the National Economic and Social Development Board	National	1. Director of Water Resource Planning Division, Agriculture, Natural Resource and Environment Planning Office 2. Plan an Policy Analyst Special Professional Level, Agriculture, Natural Resource and Environment Planning Office	24-02-17
4. Department of Disaster Prevention and Mitigation, Ministry of Interior	National	1. Director of Research and International Cooperation Bureau 2. Scientist Professional Senior Level	24-02-17
5. Department of Public Works and Town and Country Planning, Ministry of Interior	National	1. Director of Earthquake and Disaster Watch and Studies	07-03-17
6. Department of Drainage and Sewerage, Bangkok Metropolitan Administration	Metropolitan	1. Department Head of Bangkok Flood Control Center	14-02-17
7. Department of Fire and Rescue, Bangkok Metropolitan Administration	Metropolitan	1. Professional Level Officer in Plan and Policy	22-02-17
8. Department of Strategy and Evaluation, Bangkok Metropolitan Administration	Metropolitan	1. Director of Human Resource and Social Strategy Division	23-02-17
9. Department of City Planning, Bangkok Metropolitan Administration	Metropolitan	1. City Planner, Senior Professional Level	23-02-17
10. Department of Environment, Bangkok Metropolitan Administration	Metropolitan	1. Head of Vehicle Emission Control Sub-division Air quality and Noise Management Division (Bangkok resilience strategy coordinator team) 2. Environmentalist, Professional Level (Bangkok resilience strategy coordinator team)	15-03-17
11. Asian Disaster Preparedness Center	Non-government	1. Department Head, Resilient Cities and Urban Risk Management 2. Project Manager, Resilient Cities and Urban Risk Management 3. Project Manager, Disaster Risk Management Systems	08-02-17
12. United Nations Development Programme	International organization	1. Technical Consultant to UNDP Thailand 2. National Specialist - Institutional and Context Analysis, UNDP Thailand	27-02-17 28-02-17
13. Faculty of Architecture and Planning, Thammasat University	Academic	1. Assistance Professor in Urban Planning and Development	17-02-17
14. Water Institute for Sustainability, the Federation of Thai Industries	Non-government	1. Executive Board of Water Institute for Sustainability	20-02-17
15. Thailand Development Research Institute	Academic	1. Distinguished Fellow, Head of Water Management Research	21-02-17

Table 3

List of interview data collection with local communities, civil society organizations and a media.

Interviews		
Interviewee(s)	Communities/organization	Interview date
1. The community leader in Promsumrit	Promsumrit Community, Don-Meung District, Bangkok	18-09-17
2. Directory General of Seub Nakhasathoern Foundation	Seub Nakhasathoern Foundation (forest and natural conservation)	18-09-17
3. The community leader in Khukhotpatana	Khukhotpatana Community, Khukhot District, Pathumthani Province	19-09-17
4. Director of the Thai Water Partnership Foundation	Thai Water Partnership Foundation	20-09-17
5. Thai PBS News Editor for disaster and weather reporting	Thai PBS News channel	22-09-17
6. Political and community activist	Stop Global Warming Association in Thailand	26-06-17
7. The community member in Panthom	Panthom Community, Phra Nakhon District, Bangkok	26-09-17
8. Mayor of Wat Lamut Sub-district Administration	Wat Lamut Sub-district Administration, Nakhon Chai Si District, Nakhon Pathom Province	28-09-17
9. The community leader in Wat Pho Riang	Wat Pho Riang Community, Bangkok Noi District, Bangkok	02-10-17
10. Member of Civil Society Network for Persons with Disabilities	Civil Society Network for Persons with Disabilities	02-10-17
11. Director of Vocational Center for Persons with Disabilities	Vocational Center for Persons with Disabilities in Pathum Thani Province	04-10-17
12. Mayor of Pak Kret Municipality	Pak Kret Municipality, Pak Kret District, Nonthaburi Province	05-10-17

Table 4

A list of participants in focus group discussion organized together with the Centre for Megacity and City Studies, Bangkok, Thailand, 27 February 2016.

Participants		
1. Academic and Committee member	Asian Transportation Research Society	
2. Committee member	Thailand Concrete Association	
3. Independent Researcher	Centre for Megacity and City Studies	
4. Director	Centre for Megacity and City Studies	
5. Research Associate	Centre for Megacity and City Studies	
6. Research Associate	Centre for Megacity and City Studies	
7. Research Associate	Centre for Megacity and City Studies	
8. Research Associate	Klang Panya Research Institute	
9. Research Associate	Klang Panya Research Institute	

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